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Pleurothecium bicoloratum & *Sporidesmiopsis pluriseptata* spp. nov. from Brazil

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Abstract — Two new species of microfungi, *Pleurothecium bicoloratum* and *Sporidesmiopsis pluriseptata*, found on decaying plant materials are described and illustrated. *Pleurothecium bicoloratum,* also collected in Venezuela, is distinguished by broad allantoid, bicolored, 3-septate, smooth conidia with dark olivaceous-brown central cells and hyaline ends; *S. pluriseptata,* thus far known only from Brazil, is characterized by obclavate, smooth, dirty brown conidia with up to 23 septa.

Key words — asexual fungi, taxonomy, leaf litter

Introduction

During a survey of hyphomycetes associated with plant litter from the Amazon forest (Amapá state) and semi-arid region (Bahia state), two undescribed *Pleurothecium* and *Sporidesmiopsis* species were collected. The specimens, which could not be assigned to any species currently accepted in those genera, are described here as new.

Materials & methods

Leaf and wood litter samples were transported to the laboratory where they were placed in Petri dish moist chambers and stored in a 170 L polystyrene box with 200 mL sterile water plus 2 mL glycerol, at 25°C for 30 days (Castañeda-Ruiz 2005). Mounts were prepared in polyvinyl alcohol, lactic acid, and phenol (PVL) and examined and

photographed using an Olympus BX51 microscope equipped with bright field and Nomarski interference optics. All measurements were made at a magnification of ×1000. The type specimens are deposited in the Herbarium of Universidade Estadual de Feira de Santana, Brazil (HUEFS).

Taxonomy

Pleurothecium bicoloratum R.F. Castañeda, J.S. Monteiro & Gusmão **sp. nov.**

Figs 1–3a

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Differs from all other *Pleurothecium* species by its bicolored conidia with dark olivaceous brown to black central cells and hyaline end cells.

Type: Brazil, Bahia State, Abaíra, Distrito de Catolés, Mata do Cigano, 13°15′S 41°54′W, on decaying wood of an unidentified plant, 09.I.2015; coll. J.S. Monteiro (**Holotype**: HUEFS 215982).

Etymology: Latin, *bicoloratum,* referring to the bicolored conidia.

Fig. 1. *Pleurothecium bicoloratum* (ex holotype HUEFS 215982). Conidiophores, conidiogenous cells, and conidia. Bar = 20 µm.

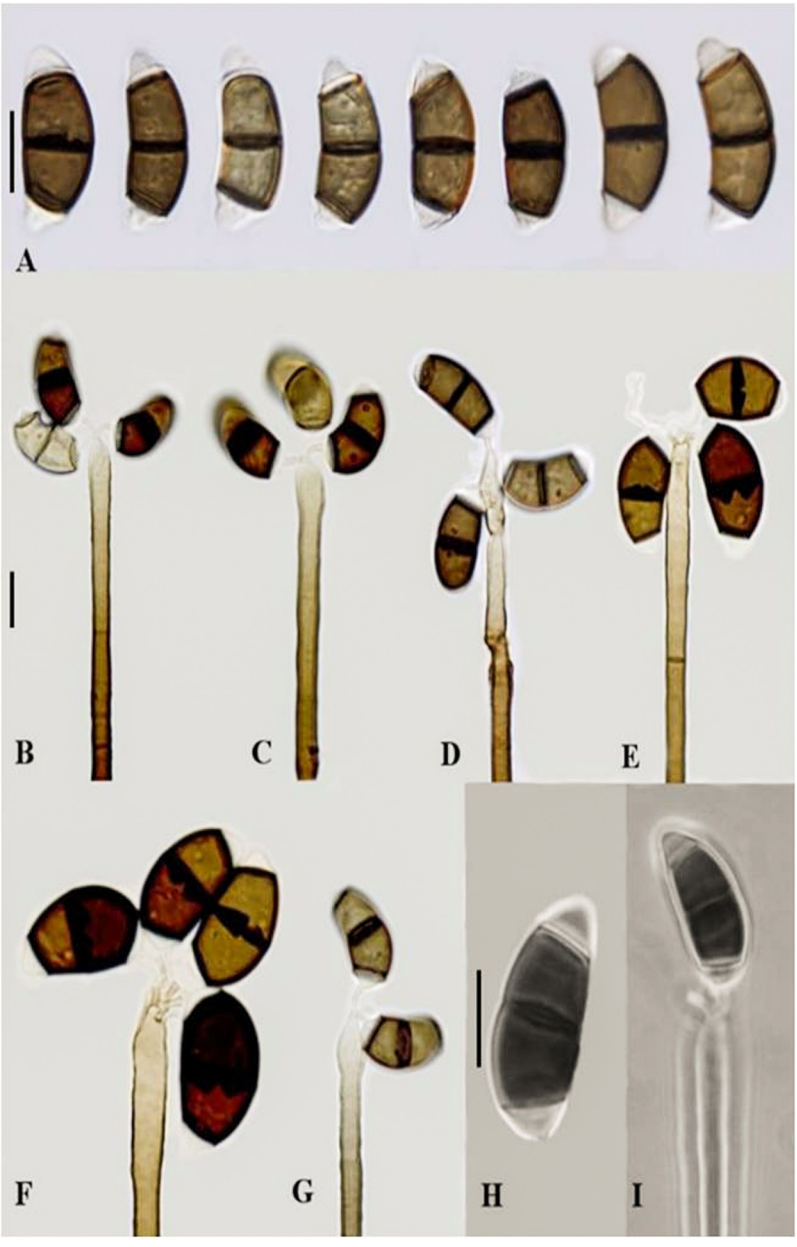

Fig. 2. *Pleurothecium bicoloratum* (ex holotype HUEFS 215982). A, H. Conidia; B–G, I. Conidiogenous cells and conidia. Bars = 10 μm.

Colonies effuse, hairy dark brown or black. Mycelium mostly immersed in substrate. Conidiophores macronematous, mononematous, erect, straight to slightly flexuous toward the apex, single, 5–10-septate, smooth, dark brown below, pale brown toward the apex, 300–470 × 5–7.5 µm. Conidiogenous cells polyblastic, integrated, terminal, sometimes becoming intercalary, 20–90 × 4–5 µm sympodially elongated, denticulate, denticles narrow cylindrical, hyaline, 3–4 × 1–1.5 µm. Conidial secession schizolytic. Conidia solitary, broad allantoid, smooth, 3-septate, bicolor, with dark olivaceous-brown to black central cells, hyaline end cells, smooth, 19–24 × 7–12 µm.

Additional specimen examined: **VENEZUELA, Aragua State**: Forest near Colonia "Tovar", 10°25′N 67°17′W, on decaying petiole of *Bactris setulosa* H. Karst. (*Arecaceae*), 16.XII.2003; coll. J. Mostacero (HUEFS 216011).

Note: Höhnel (1919) established *Pleurothecium* for *P. recurvatum* (Morgan) Höhn. The genus is characterized by distinct brown conidiophores and polyblastic sympodially extended denticulate conidiogenous cells. The conidia are solitary, unicellular or septate, hyaline or pigmented (Arzanlou et al. 2007, Cooper 2005, Goos 1969, Matsushima 1975, 1980, Matsushima & Matsushima 1996, Réblová et al. 2012, Subramanian & Bhat 1989, Wu & Zhang 2009). *Pleurothecium leptospermi* J.A. Cooper and *P. recurvatum* are superficially similar to *P. bicoloratum* in having paler end cells and darker central cells, but *P. leptospermi* has brown denticles and fusiform 3-septate brown smaller (15–18 × 4–5 µm) conidia, while the allantoid conidia of *P. recurvatum* are hyaline initially and narrower (18–23(–30) × 5–7 µm). The conidia of other described *Pleurothecium* species clearly differ from *P. bicoloratum* (see Fig. 3). *Pleurothecium magnum* Subram. & Bhat (Subramanian & Bhat 1989) should be excluded from *Pleurothecium*: it more closely resembles *Kylindria* species and is distinguished by sympodial extensions of the inner conidiogenous cell layers, some enteroblastic percurrent regenerations, and conidia eccentrically attached to flattened denticulate conidiogenous loci—none of which are characters assigned to *Pleurothecium.*

Key to *Pleurothecium* species

1. Conidia unicellular 2
1. Conidia septate 3
2. Conidia ellipsoidal to oblong or obovoid, hyaline, 5–8 × 2.5–3 µm .. *P. semifecundum*
2. Conidia narrowly obovoid, pale brown, 8.5–13.5 × 4–5 µm ..... *P. obovoideum*
3. Conidia 1-septate 4
3. Conidia with more than one septum 5
4. Conidia clavate, pale brown, 15–32 × 3–4 µm ..... *P. clavatum*
4. Conidia cylindrical, hyaline to pale brown, 14–21 × 1.5–2 µm ..... *P. malayense*

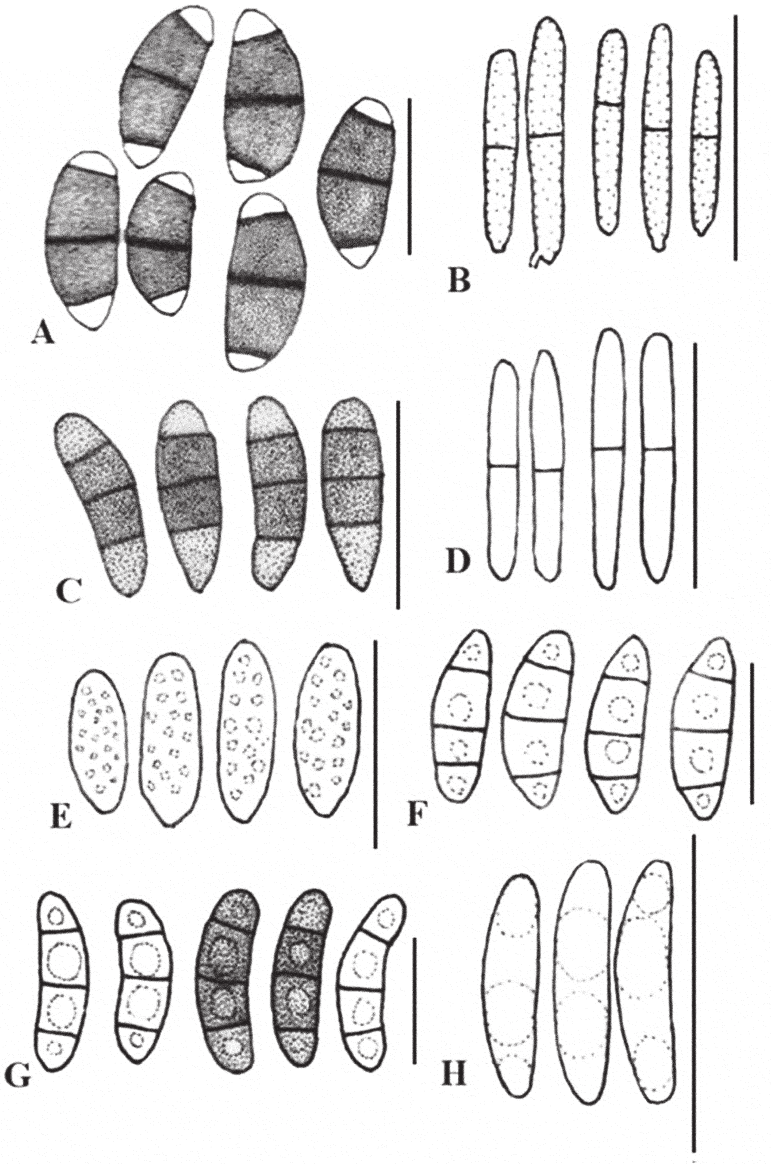

Fig. 3. Representative conidia of *Pleurothecium* spp. (re-drawn from the literature). A. ***P. bicoloratum***. B. ***P. clavatum***. C. ***P. leptospermi***. D. ***P. malayense***. E. ***P. obovoideum***. F. ***P. pulneyense***. G. ***P. recurvatum***. H. ***P. semifecundum***. Bars = 20 µm.

5. Conidia 3-septate, always hyaline, cylindrical to fusiform, slightly curved, guttulate, 23–30 × 7–8 µm ..... *P. pulneyense*
5. Conidia 3-septate, sometimes or always pigmented 6
6. Conidia fusiform, curved, brown with median cells darker than end cells, 15–18 × 4–5 µm ..... *P. leptospermi*
6. Conidia allantoid 7
7. Conidia always with dark olivaceous-brown to black median cells and hyaline end cells, 16–27 × 7–12 µm ..... *P. bicoloratum*
7. Conidia at first hyaline, later pale brown with median cells darker than the end cells, 18–23(–30) × 5–7 µm ..... *P. recurvatum*

Sporidesmiopsis pluriseptata J.S. Monteiro, Gusmão & R.F. Castañeda **sp. nov.**

Fig 4

MycoBank MB 813041

Differs from all other *Sporidesmiopsis* spp. by its larger and multiseptate conidia.

Type: Brazil. Amapá State: Serra do Navio, 00°54′N 51°59′W, on decaying leaves of *Elaeis* sp. (*Arecaceae*), 14.X.2014; coll. H.M.P. Sotão (**Holotype**: HUEFS 216009).

Etymology: Latin, *pluri-*, meaning many several, + *-septata*, refers to the septa.

Colonies effuse, hairy, black. Mycelium mostly immersed in substrate. Conidiophores macronematous, mononematous, erect, straight, branched above, cylindrical, ≤22-septate, sometimes with 1–2 enteroblastic regenerations, smooth, black, 160–320 × 6–10 µm, 0–7-septate, branches more or less cylindrical, sometimes slightly sinuate, dark brown, 7–30 × 4–5 µm. Conidiogenous cells monoblastic, mostly discrete, lateral, determinate, sometimes integrated, terminal, doliiform or shortly cylindrical, dark brown, smooth, 3–7 × 4–5 µm. Conidial secession schizolytic. Conidia solitary, obclavate, straight or curved, acropleurogenous, 11–23-euseptate, brown, pale brown toward the apex, smooth, 80–130 × 6–8.5µm, smooth, sometimes with a rudimentary, hyaline, mucous tunica at the apical cell.

Note: Subramanian & Bhat (1989) established *Sporidesmiopsis* for *S. malabarica* Subram. & Bhat. The genus is characterized by conidiophores that are distinct, erect, branched toward the apex, and conidiogenous cells that are monoblastic, discrete, and short cylindrical or doliiform (Xia et al. 2014). *Sporidesmiopsis dennisii* (J.L. Crane & Dumont) Bhat et al., which is superficially similar to *S. pluriseptata*, is distinguished by its 10–15-septate, smooth or verruculose, dark brown conidia, paler toward the apex, 69–92 × 11–13 µm (Bhat & Kendrick 1993, Crane & Dumont 1978).

Fig. 4. *Sporidesmiopsis pluriseptata* (ex holotype HUEFS 216009). A–G. Conidia; H–K Conidiophores, conidiogenous cells and conidium. Bars: A–J = 20 µm; K = 10 µm.

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Literature cited

Arzanlou M, Groenewald JZ, Gams W, Braun U, Shin HD, Crous PW. 2007. Phylogenetic and morphotaxonomic revision of *Ramichloridium* and allied genera. Studies in Mycology 58: 57–93. http://dx.doi.org/10.3114/sim.2007.58.03

Bhat DJ, Kendrick WB. 1993. Twenty-five new conidial fungi from the Western Ghats and the Andaman Islands (India). Mycotaxon 49: 19–90.

Castañeda-Ruiz RF. 2005. Metodología en el estudio de los hongos anamorfos: 182–183, in: Anais do V Congresso Latino Americano de Micología. Brasilia.

Cooper JA. 2005. New Zealand hyphomycetes fungi: additional records, new species and notes on interesting collections. New Zealand Journal of Botany 43: 323–349. http://dx.doi.org/10.1080/0028825X.2005.9512957

Crane JL, Dumont KP. 1978. Two new hyphomycetes from Venezuela. Canadian Journal of Botany 56: 2613–2616. http://dx.doi.org/10.1139/b78-313

Goos RD. 1969. The genus *Pleurothecium*. Mycologia 61: 1048–1053. http://dx.doi.org/10.2307/3757488

Höhnel F. 1919. Fünfte vorläufige Mitteilungen mykologischer Ergebnisse (Nr. 399–500). Berichte der Deutschen Botanischen Gesellschaft 37: 153–161.

Matsushima T. 1975. Icones microfungorum a Matsushima lectorum. Nippon Printing Co, Osaka.

Matsushima T. 1980. Saprophytic microfungi from Taiwan, part 1, hyphomycetes. Matsushima Mycological Memoirs no. 1. Matsushima Fungus Collection, Kobe, Japan.

Matsushima K, Matsushima T. 1996. Fragmenta mycologica – II. Matsushima mycological memoirs no. 9: 31–40. Matsushima Fungus Collection, Kobe, Japan.

Réblová M, Seifert KA, Fournier J, Štěpánek V. 2012. Phylogenetic classification of *Pleurothecium* and *Pleurotheciella* gen. nov. and its dactylaria-like anamorph (*Sordariomycetes*) based on nuclear ribosomal and protein-coding genes. Mycologia 104: 1299–1314. http://dx.doi.org/10.3852/12-035

Subramanian CV, Bhat DJ. 1989 ["1987"]. Hyphomycetes from South India I. Some new taxa. Kavaka 15: 41–74.

Wu YM, Zhang TY. 2009. New species of *Phialosporostilbe* and *Pleurothecium* from soil. Mycotaxon 110: 1–4. http://dx.doi.org/10.5248/110.1

Xia JW, Ma LG, Castañeda-Ruiz RF, Zhang XG. 2014. A new *Sporidesmiopsis* and three new records of other dematiaceous hyphomycetes from southern China. Nova Hedwigia 98: 103–111. http://dx.doi.org/10.1007/S10267-011-0152-1